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Pro-Poor Access to ICTs – Exploring Appropriate Ownership Models for ICTD initiatives

Case Study of Akshaya

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Akshaya

How Community Demand Sparked off an ICT Initiative

Akshaya[1] is a project of the government of the state of Kerala[2] in India, to reach the benefits of the new ICTs to all of its citizens. In this endeavour, the Kerala government put first things first. The initiative was rolled out at a district level (piloted in the district of Malapuram), and began with an e-literacy campaign. Using public funds, the target of teaching basic computer skills to at least one person in every family has been achieved in less than a year (during 2003-04).) More than half a million people have been provided with basic computer skills, and around 65% of the beneficiaries under this program have been women.[3].

Some Facts about Malapuram and Akshaya

Malapuram is one of the 14 districts in the state of Kerala. Though Kerala has the best human development indicators in India, Malapuram is one of the more socially backward districts in the state.

Malapuram has a per capita annual income of INR[4] 16,766 (USD 390), as against Kerala's INR 25,764 (USD 600) and India's overall per capita income of INR 18,825 (USD 438). A very large number of people from Malapuram work as unskilled and semi-skilled labour in West Asia.

Malapuram's population of 3.6 million lives in 135 villages and 5 towns, spread over an area of 3,550 square Kilometres. It has a high population density of 1,022 persons per square kilometre, as against 819 in Kerala and 324 in India. The local self-government systems are highly developed in Malapuram, as they are elsewhere in Kerala. There are

[1] www.akshaya.net

[2] A state in South India with the highest human development indicators in India.

[3] The capsule course, specially designed for the project not only taught basic usage skills for computer and Internet, it also included various practical uses of the Internet like finding the day's news, e-government services etc.

[4] Indian Rupee; it is approximately 43 INR to 1 USD at current exchange rates (January 2005).

100 village self-government bodies (panchayats[5]) and 5 elected municipalities. These elected bodies have considerable powers, and a significant chunk of development funds are spent through them.

Akshaya has been started as a pilot program in Malapuram for extending the benefits of ICTs to all people. At present more than 600 Akshaya centres have already imparted basic computer literacy to at least one member in every family in the state, and are functioning as the hubs of a large number of ICT-enabled services for the community. The Akshaya program is now ready for a state-wide rollout, aiming at 6,000 centres, which would cover the whole state.

The demand for an Akshaya kind of initiative came from the local communities. A very large number of people from Malapuram are employed in West Asia as un-skilled or semi-skilled labour. Earlier, some basic education was considered a bonus for migration to these places, but it was increasingly felt that even for small jobs, knowing a bit of computers helps improve employability.

Kerala has one of the developing world's most decentralized systems of governance, and local self-government bodies at village and town levels have considerable powers, including financial powers. The village self-government bodies (encompassing one or more villages) are called panchayats. In April – May 2002, the panchayats of Malapuram approached the state government for setting up a government-backed computer education program. The context of this demand was that a number of computer education 'shops' were proliferating in Malapuram that charged exorbitant fees while providing low quality education. Additionally, since most of the immigrants to West Asia leave their families behind in the villages, there was an emerging demand for Internet based personal communication as well.

The government of Kerala had earlier set up an IT mission with a very diffused agenda to harness the 'IT opportunity' for the state. So while it was the job of the IT mission to promote IT and IT based industry in the state, it was also involved with e-governance and IT-led reforms in public administration. The IT Mission also had the agenda of reaching IT connectivity, education and services to the rural masses.

[5] There are three tiers in the Panchayat system – village, block (a sub-district level) and district panchayats. The village panchayat is made up of directly elected representatives. Additionally, the *gram sabha*, consisting of all adult members of the village, is also considered a tier of the self-government structure.

The panchayats were ready to contribute their funds for the 'one computer literate person per family' programme – which was designed by the IT mission on popular demand raised by the panchayats. But the IT Mission did not take the two possible options for the programme; outsourcing the e-literacy campaign to existing private computer education institutes (as is done by many other state governments) or setting up government-owned education centres (which would have been unjustified expenditure, without clear plans for the continued utility of centres after the completion of the e-literacy drive). Instead, the mission saw in this IT literacy drive an opportunity to set up a network of telecentres that could provide a range of ICT-based services to rural citizens. Thus the idea of Akshaya was born.

Choice of Ownership Model for Akshaya Centres

The IT Mission was already running an urban service – FRIENDS (Fast, Reliable, Instant, Efficient Network for Disbursement of Services) - that used ICTs to front-end some interactions with a range of government and some non-government, agencies. FRIENDS centres are owned by the government and run by its employees. However, the magnitude of the challenge of getting an ICT-enabled interface agency to the villages is huge. The development benefits from providing widespread access to ICTs are still not proven well enough for governments to commit a dedicated budget for ICT services infrastructure of the proportions required to reach every citizen. Also, since initially only a limited range of governmental and other developmental activity can be offered from rural ICT centres, the ICT access infrastructure (telecentres) optimally should also be used to provide other ICT-based services to the community, for which demand is building[6]. However, all these services, and further innovative possibilities, would demand a lot of enterprise on the part of the centre operator. These factors meant that avenues other than completely government owned and managed structures needed to be explored.

The IT Mission of Kerala thought it most appropriate to call for applications from private community based entrepreneurs to invest in and run the envisaged centres in Malapuram. The required investment was set at 0.45 million INR (USD 10,465), invested

[6] In many ways Kerala's rural situation is different from those of most other states in India. Apart from near universal literacy, factors like high levels of job-related migration, where families invariably stay behind, and the fact that Kerala is really one big semi-urban stretch with a high density of population, makes the outlook for rural ICT centres better in this state.

in an infrastructure of 9 computers, equipment and other costs. (Later the minimum investment was reduced to 0.25 million INR (USD 5,814) with 5 computers.)

The location of the centres was chosen in a manner that would ensure at least one centre within 2 kilometres of every habitation, with each centre catering to an average of around 1,000 families[7]. A total of around 600 centres covering the district of Malapuram have been set up. To ensure universal coverage, some centres are also located in remote places where there is no access by road.

There were clear rules and conditions under which Akshaya centres were to be run, which were incorporated in the agreement entered into with the private operator. The call for applications met with a huge response, since the successful applicants were also to be helped by the government in obtaining loans on easy terms. The local panchayat members sat through the process of selection of the private operators, and the criteria of selection included previous involvement in community activity. Even after selection, when the Akshaya centre starts operating, the franchisee is under the clear oversight of the panchayat as well as the district administration for staying within the parameters of the agreement that he or she has entered into, which ensures that important community interests are taken care of.

On the issue of the ownership model of Akshaya, chief government functionary of Malapuram district, the District Collector, Sivasankar, says that they had considered the complete range of options, including of using self-help groups for running the ICT centres. But it was felt that shared ownership could be a disincentive for the level of enterprise required. Furthermore, the income from the centres was expected to be sufficient only for one family. A single private franchisee model ensured a more focused ownership and responsibility essential to running this new and untested business, which was perceived to require a lot of initiative.

The decision on ownership model was also based on the earlier experience with the village library project of the Kerala IT Mission. In this project, Internet-enabled computers were bought by the government and placed in government-owned village libraries. The library manager, a government employee, was encouraged to try and develop Internet usage in the community, for which a small fee was charged and the manager received a part of the collection. This experiment did not succeed, and little use

[7]Malapuram has a high population density (1,022 per square kilometre), with much of the habitation along the roads. This makes it easier to locate centres within close reach of most households.

was made of the facilities. The library manager was found to have put in no extra effort to evangelize the usefulness of the Internet and the availability of the service. He would just sit through the normal library hours, and collect the charges if a user came along.

Yet, the lack of enterprise of a manager who was assured of an independent, regular income was not the only cause of failure. Normally Internet is not by itself a popular service in rural settings. The Akshaya team decided that the way forward was to actively develop ICT-based services, along with their offline components, in the form of services networks. (Services networks develop and deliver a variety of services, sharing some common infrastructure, management and linkages to service providers.) And the Akshaya team, in an effort to maintain the revenue streams of the private franchisee , have been very active in developing new services for the Akshaya centres.

The Services Network – Building an ICT-based Institutional Infrastructure

While the Akshaya team is mandated by its very raison d'etre to develop ICT-based services that are useful to the community, the fact that the private operators mostly depend on the team for developing newer revenue models, makes it work harder and quicker. In fact, what we see here is a "profit pull" impacting positively, though in an indirect way, on the efficiency and accountability of a government body.

The key strategy for the sustainability of the Akshaya centres lay in the assured returns that the centre operator received from the e-literacy campaign. Each centre catered to around 1,000 learners and a fee of INR 140 (USD 3.26) per learner was collected by the centre operator - INR 120 (USD 2.79) came from the panchayats and INR 20 (USD 0.47) was paid by the learner herself - for teaching the basic computer course developed by the IT Mission. This meant that INR 0.12 million (USD 2,791) of the INR 0.25 million (USD 5,814) invested by the private franchisee was recovered in the first year through e-literacy program itself, covering around 50% of capital costs.

However, the e-literacy program finished after about a year (in 2004), and the Akshaya team had to find new sources of income for the operators. A number of other ICT-based services have now been successfully developed.

The FRIENDS project operating in urban areas already had an arrangement with many government and non-government agencies for collection of their utility bills. The IT Mission extended this arrangement from the FRIENDS project to the Akshaya centres.

Collection of these bills, for which the centre charges a small fee per bill, especially of electricity and telephone bills, is now a major source of revenue for Akshaya centres. E-payment of bills directly into bank accounts of the various agencies is also being introduced now.

The Akshaya team has also developed linkages for the centres to sell financial services, like banking and insurance, to the local community. The centres are also working as pick-up points for a courier agency. A few computer courses developed in partnership with expert agencies are provided at the centres. These courses are certified by the government, which makes them more valuable. At Akshaya centres, children work on curriculum related projects on computers. A lot of content connected to school curriculum in Kerala has also been put online, which students can access at these centres.

Some centres have kids clubs that organize different activities, and some are used by women's groups for computer-based and other activities. Many women do not find private Internet centres in these areas friendly, since viewing of pornography by men in private centres is quite prevalent, and also traces of computer usage by women users, such as their email ids, may get used for harassing them. The Akshaya centres have the credibility associated with 'community spaces', and are freely used by women. Users view these centres as places which are accountable to the local panchayat and the district government, and are therefore worthy of trust. The centre operator is also very conscious that issues like complaints of pornography viewing at the centre will be viewed seriously by the district government and the Akshaya team. The atmosphere inside Akshaya centres is palpably unlike that of a pure commercial space which is entirely focussed on specific transactions, with a view to make a profit out of it.

Recently, the IT Mission, in cooperation with the state agriculture department, has designed, and is beginning to rollout a massive program of agriculture content and services that can be accessed through Akshaya centres. Akshaya has also organized collectives of farmers who exchange information on best practices in agriculture. The Akshaya team is also working on getting other departments such as health, fisheries and tribal welfare to use these centres for their extension activities. The model proposed is that the Akshaya centres will facilitate ICT-aided information dissemination, training etc. for community members on behalf of these departments, and get paid by the departments, for each member of the community who is reached. These departments at present use resource intensive means, depending exclusively on their staff to reach communities, and Akshaya's proposal if accepted, would reduce costs of extension services and is likely to enhance reach and effectiveness.

Overall, the effect of government 'presence' and 'patronage' is very evident at Akshaya centres and this gives them a strong community character. While the centre operator does sometimes find a revenue model around community facilities and services, described above, the basic community orientation is unmistakable, and not every activity delivers pecuniary returns. In fact, the centre operators have participated in, and even spearheaded locally, campaigns for health check-ups, agriculture information dissemination, community resource mapping and bio-diversity mapping in villages, working either entirely pro bono or for small payments by district administration that are by far disproportionate to the effort and resources invested by the centre operator.

Services at the Akshaya Centre

A typical Akshaya centre has 5-9 computers, and employs 3-4 people. The centre typically is provided Internet connectivity through a WiFi network. The services offered at the centres are -

- Computer education
- Computer-aided education providing e-content relating to schools curriculum
- Content – education, health, career development, livelihoods, agriculture, law
- Internet browsing
- Utility Bill payments
- Stand alone computer-based services such as digital photography, desktop publishing, data entry, job work etc
- Financial services such as banking and insurance
- Courier services
- Facilities for children's clubs, women's clubs, farmer's clubs, youth clubs
- Community health mapping
- Community resource mapping, bio-diversity mapping

Ensuring Conformity to Community Interests

What motivates the centre operator to facilitate community related work done by the government and other agencies? How can the government and the panchayats ensure that the centre operator will facilitate ICT-based community activity that is generally useful to many, but which may not generate revenue, or may target those who just cannot afford fees?

An example of such an activity is the recent announcement by the Chief Minister of Kerala that he will henceforth regularly interact with citizens over video-conferencing. The government will obviously like to use the Akshaya centres for rural citizens to participate in these video-conferences. But it is unlikely that citizens will be charged a fee to participate in the video-conference with the chief minister. What if the centre operator is not too keen to allow her facilities to be used for free for such community purposes? And what if the video-conference time is just the time when she has planned some computer classes that generate revenue for her? And as for the planned health, livelihood support and welfare extension activities at Akshaya centres, even if some fees are paid to the centre operator, can she be allowed to refuse the service, if she finds other activities more profitable to conduct at that time?

When queried on these points, senior government functionaries involved with Akshaya project insist that the structure of the Akshaya network ensures that the required 'control' would always be possible. The centres get a large share of their revenues from services networks that were built, and are anchored and run by the Akshaya team. The quid pro quo between public investments in the Akshaya network and necessary requirements of community interest activities, as needed, by the Akshaya centres is implied and accepted by centre operators (even beyond such conditions that are specifically mentioned in the contract).

The crucial role played by the government in the Akshaya network has been further strengthened since the connectivity to the centres is now provided through a district wide WiFi Intranet owned by the government. Also, a lot of useful content for Akshaya centres, including about health, education and agriculture is hosted on the server at the Akshaya Network Operating Centre.

So, Akshaya is not only a services network, but also a technology network and a valuable content network, owned and operated by the district government. Being tied to the network, the Akshaya centre operator is dependant on the government, and therefore, the use of ICTs for community purposes at these centres can reasonably be ensured. The Akshaya system works through cross- sectoral accountability. The government bodies - the Akshaya team and the district administration - takes care that the private franchisee (centre operator) gets enough revenue for himself by facilitating various activities through the Akshaya network, and the operator obliges by providing support, including the use of the ICT infrastructure, for activities that are important for the community.

At the community end, the panchayats have the means and the mandate to keep a watch on the centre operator for fulfilment of community obligations. The government officials we spoke to on the issue of community accountability told us that the voluntary community-mindedness and involvement of the centre operators should not be discounted. During the selection of the operators, some attention is given to the background and earlier community involvement of the operator. In rural communities, the social dynamics are such that any important community role – of the kind that the centre operator comes to play - is highly valued, since this provides enormous credibility and 'respect' to the operator. This in itself contributes to the operators toeing the government and the community line, and facilitating activities that are necessary to reach the gains of the new ICTs to the rural areas, with some equity. However, still in other cases the government may have to chip in with specific service based subsidy for access to the poor and the disadvantaged, or generally for universal service coverage, as it did in the case of the e-literacy program, and plans to do for its various extension programs.

Roles and responsibilities of various actors in the Akshaya network

- **Kerala government** - Provides the legal, institutional and resource support to the Akshaya program.
- **IT mission** (of the Kerala government) – Designs the Akshaya structure and systems, including the business model and services; develops software support; organises linkages and agreements for content and services development; develops technology solutions and implements them; develops and hosts local content.
- **Akshaya team at Malapuram** – represents the IT mission at Malapuram, and carries forward the mission's work at the district level; liaises with franchisees and the district administration on a regular basis for smooth functioning of the Akshaya network – services network, technology support, connectivity - and sorts out any issue faced by the centres.
- **Malapuram district administration** – Selects and oversees Akshaya franchisees along with the Akshaya team; provides help to franchisee for loans etc; supports the Akshaya team, and provides local help and facilities as needed; organises meetings with local panchayats and feeds their inputs, as well as the priorities of the district government, into Akshaya's functioning.
- **Government line departments** – Co-ordinate with the IT mission at the state level for developing services and content for Akshaya; provide field based support and collaborate on specific activities with the Akshaya network such as education, health and agriculture services, at the district level.

- **Village panchayats** – Oversee the Akshaya centres in their jurisdiction; develop local ICT-based services/activities along with franchisees
- **Franchisee** – Sets up the centre with own capital and borrowed funds; runs the centre within the framework and conditions laid down by the Akshaya team; helps the team develop innovative services and herself attempts to develop more and more services at the centre; gives input for running of the Akshaya network at regular meetings; helps the Akshaya team in many community activities; herself organises ICT-enabled initiatives in the community like community database development, as well as some community activities at the centre
- **Community** - Makes use of ICT services at the Akshaya centre; gives inputs to elected representatives about services, operational and physical conditions at the centres, and provides suggestions for new services.

The officials associated with Akshaya are clear that these are only emerging institutional arrangements for using ICTs for community and developmental purposes, and that new challenges would continue to be faced. Meanwhile, they plan to learn through experience, and support and incubate appropriate institutions for this purpose.

The Akshaya team takes its responsibility for successful (read 'profitable', from the viewpoint of the franchisee) running of the Akshaya centres seriously. It keeps track of those centres that are not doing too well because of their location (in areas with very little demand for ICTs) or other reasons, and provides them outsourcing work like data-entry from government and other offices. Such support has also been specifically given to centres run by women operators, where social disadvantages suffered by women is sought to be compensated by such positive discrimination.

Local issues : Local Connectivity Solutions

The Akshaya centres had initially started with dial-up connectivity. However, after promising to give priority allocation of telephones to these centres, the public sector telephony service provider, BSNL[8], backed out. The reason given by the local BSNL officials was that they are constrained by telephone allotment policies written by the corporate office in New Delhi, and were afraid that making exceptions will expose them to litigation by other applicants for phone connections. So, many centres were left with no connectivity at all. At many other centres, the Internet connectivity, even if available,

[8] Bharat Sanchar Nigam Limited

was bad. The IT mission and the Akshaya team therefore decided to go for a WiFi based district wide Intranet, which would deliver broadband connectivity to the centres.

The wireless network in Malapuram

Putting up a wired telecom infrastructure is a difficult proposition in the hilly terrain of Malapuram, which is also criss-crossed by many water bodies. Creating a wireless connectivity network though also had its own challenges because of problems with respect to line-of-sight in such terrain and the fact that vegetation (Malapuram has an extensive tree/forest cover) absorbs wireless transmission.

For building the wireless network, the service provider chose a mix of wireless technologies. The backbone uses a network of repeaters, each of which requires only one radio with two antennae, one pointing forward and the other backward. As the network grows, each node in a network can be promoted to become a repeater. This allows each node to be deployed as the centre of the network, thereby overcoming the challenges of line-of-sight issues. Throughput is high at 8 Mbps, and can be scaled up by adding another pair of radios if the need arises. The access network which connects the centres to the backbone is a point-to-multipoint wireless wide area networking system which utilises Internet Protocol. The system can carry voice, video and data services on a single platform over a wide area. Each of the connected centres can hook up to around 30 access points. With a transmission capacity of 4 Mbps, the bandwidth can be used to provide services such as Internet access, video conferencing and e-learning[9].

At present around 400 Akshaya centres, 56 government offices and a few schools and colleges are connected in a LAN environment, which, in turn, is connected to a network operating centre (NOC). The NOC has direct connectivity with the Internet backbone through optic fibre cable and provides the necessary bandwidth. All network traffic flows through this central access point. Next to the NOC stands a radio tower that provides wireless internet access to 17 POPs (Point Of Presence). Each POP is a radio tower on a hill. It provides access to local Akshaya centers, and also relays access through to the next tower.

The WiFi network, owned by the government, has been set up by a private operator, who operates it on a BOOT (Build, Operate, Own, Transfer) model. The government has contributed an initial investment of INR 30 million (around USD 0.7 million).

[9] http://www.expresscomputeronline.com/20041206/management01.shtml

At the time the WiFi intranet was commissioned and set up, WiFi was permitted for institutional campuses but not for non-institutional outdoor connectivity[10]. The Akshaya team used its leverage as a government body and interpreted the scope of what is meant by an 'institutional campus' widely enough to cover an entire district! Apparently, the whole district network was nominated as an institutional Intranet for government-backed Akshaya centres; a circuitous way around the regulation, but it was a government-led effort, and therefore was able to get away with it. According to Sivasankar[11], who is also in charge of Akshaya in Malapuram (apart from being the chief functionary of the district administration), the team had faced numerous minor and major legal and other issues in setting up such an extensive wireless network. Here again, the fact that Akshaya was a government initiative was immensely useful[12].

VoIP (Voice over Internet Protocol) is another area where regulatory issues have arisen. Most families in the district have relatives working abroad, and VoIP communication to other countries has a sizeable market. At present it is illegal to route VoIP through PSTN (Public Switched Telephone Network), though calls can be placed to locations abroad over VoIP from computers in the Akshaya centres. It appears though that some centres do use innovative methods to connect VoIP calls over computers at the centres through local lines to customers (dialling up the customer's house and connecting the line to the VoIP chat). People also do come to the centres for voice and video chat from the computers in these centres with their relatives abroad.

Since the demand for inexpensive long distance voice services is huge, the centre operators are eager to get VoIP legalised whereby they can run actual telephone networks on VoIP, providing connectivity - telephone and Internet - to their customers through wireless or cables. For this purpose they could operate as the local ISPs (internet service providers).

But the telecom policies, tightly controlled by the central government are not very friendly to local connectivity solutions. They are mostly oriented to protect the business

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[10] The latest policy announcement of the Telecom department of the Government of India has legalized WiFi for outdoor use also.

[11] Sivasankar was the Director of IT Mission when Akshaya was conceived and rolled out. When it was time for a district posting, he chose the project area of Akshaya. This fact that the district administration is led by someone who has been involved throughout with the Akshaya project is a big factor in its success in the field.

[12] A simple example of the benefit of it being a governmental effort is the availability of government buildings in most places for rent-free installation of the needed towers, which can itself be a big cost saver.

models and revenue bases of existing vertically integrated telecom operators. Legalising VoIP is resisted by these telecom companies. In general, growth of competition from small local operators is opposed by them. On the bidding of BSNL, the public sector operator, government of India recently imposed huge license fees (INR 100 million) for becoming an ISP, while earlier anyone could become an ISP with a token fee of INR 1. The recent refusal of the government of India to accept the recommendation by the Telecom Regulatory Authority of India that all incumbent infrastructure owners be asked to 'unbundle the last mile'[13], is also bad news for these operators, who are eager to make the best of both the existing great demand for cheap communication facilities, as well as the further possibilities sparked by the Akshaya initiative.

Government officials at the state and district level agree with the local centre operators that there should be greater freedom for developing local solutions for connectivity, and that the present telecom policies are an unnecessary and serious hindrance. Given recent innovations in telecom technology, local solutions such as wireless based local access combined with VoIP can ensure easier and faster connectivity to areas not reached by PSTN, and also bypass the current problems about connectivity even at places served by existing PSTNs like long waiting lists for connections (as at present in Kerala), the high cost of service and low Internet bandwidths.

The telecom policy, and the operation of the public sector telecom operator, is controlled by the central government, and is often insensitive to the needs of the local ICT-based initiatives like Akshaya. Aruna Sundararajan, the IT secretary to the Government of Kerala, recounts numerous instances of difficulties in getting connections from BSNL even for pressing public purposes. When asked about her opinion on the option of a nationalized backbone over which local access systems were allowed to operate in an open un-obstructed manner (a paradigm that is beginning to emerge as a viable option for making ICTs widely accessible), she felt that such an arrangement would indeed be a lot more conducive to local rural IT based development initiatives[14].

The district wireless Intranet is in itself emerging as an important communication platform, independent of its connection to the Internet backbone. It links crucial

[13] Allowing the installed infrastructure to be used by other service providers for last mile service.

[14] Most state governments have commitments from telecom companies that own optic fibre backbones in their areas for certain free bandwidth, in return for 'right of way' granted to them by the authorities for laying the cable network. These governments, including that of Kerala, plan to use this bandwidth for taking connectivity to their offices, and to the outposts concerned with development delivery in the field, and also link self-government institutions right up to the villages.

government offices that are concerned with citizen services, including the police. The stage is set for useful governance services to be delivered over these Intranets. Many of these offices use VoIP through computers for local communication, including some police stations that have heavy communication requirements. This district government and district community owned Intranet carries useful content in areas of health, education and agriculture services. Plans are also afoot for providing video conferencing over the Intranet between experts in these areas and citizens.

Mainstreaming ICTs in Domain Agencies

The Akshaya team has achieved the first step of putting in place a government/communally owned technology and services network – operationalised through private enterprise, and the necessary institutional structures supporting it. Now it has turned its attention to improving and expanding the basket of useful services and content for delivery over this infrastructure. This brings into focus the role of domain government departments of health, education, agriculture, social welfare etc. The next frontier for achieving the full value of ICTs in rural areas is to mainstream ICTs into these sectors. This will enable services, content and applications in all these crucial areas to be produced and delivered in a manner that makes best use of the Akshaya network. All energies of the district administration at Malapuram and the IT Mission at the state capital are now directed towards this difficult task.

Agencies like Akshaya and the IT Mission that evangelize ICTs put in great effort - with a 'whatever it takes' attitude - to devise useful services for citizens to demonstrate the benefits of ICTs both to the citizens themselves and to the political and bureaucratic establishment in the government. But a non-specialist agency like Akshaya, despite good intentions and drive, cannot by itself achieve the professional levels in service development and delivery, in areas of health, education, agriculture, welfare, etc., which are the responsibilities of full fledged departments in the government. For this purpose they need the complete support of these departments. However these government departments, protective of their respective domains, often look askance at Akshaya's efforts.

ICTs open up many new possibilities that can make the education, health, agriculture, welfare and other government services much richer in content as well as more efficient in delivery. But before the government departments responsible for these services take up ICTs whole-heartedly, it is still needed for Akshaya team to evangelise these possibilities by itself developing some of these services and demonstrate the benefits. At

this point some authorities in domain departments can be expected to get attracted to the possibilities and begin work in-house for service improvement. On the other hand, citizens, and their political representatives, seeing the new possibilities for themselves, can be expected to put pressure on these departments to use ICTs in their work.

In the interim period, however, some conflict between the IT department and the domain or line departments is likely to arise. When, in 2004, Akshaya undertook a health mapping exercise on some lifestyle diseases prevalent in the district, using some doctors associations, the government health department was less than enthusiastic and found fault with the procedure and methodology. Similarly, securing the cooperation of the agriculture department at the district level in providing some agriculture-related services through Akshaya has encountered resistance. It can be worse in areas with cross-departmental jurisdictions, which are often 'no-man's land'. When Akshaya attempted a resource mapping in some villages, they found that no single agency kept records of the various developmental activities that had taken place in the community at different points of time, and that of the resources that were thus created.

It is evident that the use of IT in governance, as it has done in world of business, puts great pressure on the very structures of the government as they have functioned traditionally. Pressures are built for structure or process re-engineering, resulting in predictable resistance from incumbent vested interests. In any parliamentary democracy, responsibility and work, and therefore the credit, in governmental activity are divided manifold among ministries and departments. Each of them has separate political accountabilities which can make the task of co-ordination difficult, especially when restructuring moves in a direction that gives some particular departments or ministries greater visibility and credit (in this case the IT ministry vis-à-vis other departments). In Kerala, the state government is a coalition ministry with different parties holding different portfolios, making this problem even more acute.

Under the circumstances, it is fortunate that the state created the IT mission early, and this body has developed some credibility and standing for effective coordination between different departments from the state capital itself. It also helps in some ways, that most of the staff of the IT mission are is on contract, and not from the government bureaucracy. The governance of the Akshaya network in the hands of such an agency does make the difficult work of handling different stakeholders and different institutions, within the government and outside, a little easier. However, further institutional developments in the area of appropriate structures that are best suited to take benefits of ICTs to all people will require strong political will and direction, as much as the highest quality managerial expertise.

Building the Blocks to ICT-enable Communities across the State

The most significant feature of Akshaya has been that it has both (1) a state wide implementation design from its inception, managed by a state government body, and (2) the participation of local government institutions. The role of IT mission, at the state capital, has been of providing required resource support, including of quality management resources, access to needed knowledge as well as the economies of scale for the success of the initiative (since common strategies for a state wide network are evolved). The involvement of the self-government bodies (panchayats) has ensured local feedback on needed services as well as on the quality of service, and local community supervision of the franchisee.

The initial demand for the government to provide basic computer education came from the people and their elected representatives. However, it was the IT mission's idea to develop the Akshaya centres beyond IT training facilities to hubs for a variety of ICT services useful for the community. It had been the general experience that Internet use by itself was not very popular in the community. A few private Internet cafes have existed in Malapuram for quite some time, even before Akshaya. But even when the Internet was used at these private cafes, it was used mostly for chatting, sometimes for emails; and the use was limited to a very small section of the people. Under the circumstances, neither did Internet cafes make a good business model nor was there any real 'empowerment' of the community in this limited use of ICTs.

The IT mission decided that setting up ICT centres would hardly be enough; it needed to do pro-active work in developing a variety of ICT-based services that are relevant to the community. And since developing such services required considerable content creation, processes of accessing it, linkages with a variety of service providers, common facilities like courier services (for movement of documents etc between centres, service providers and citizens), software and hardware support, and new connectivity solutions, it was found necessary to develop a services network with the district Akshaya team at the hub.

With the centrality of the Akshaya team to the functioning of the Akshaya network, and the accountability of the team to the panchayats and the government, it was assured that the Akshaya centres will always function in a manner that serves community interests. However, the use of private franchisees for operating individual centres was found

useful for at least 2 reasons. (1) It brought in private capital[15], greatly reducing the resource demands on the government and (2) the franchisee had a strong stake in the success of the centre and its use by the community, which led him to be an enterprising partner in developing the facilities at the centre, as well as the Akshaya network overall. So, while the central involvement of a body accountable to the community ensures that the private partner works in a manner consistent with the best interests of the community, the need for keeping the 'business' of the franchisee running at a sufficiently profitable level ensures that the public participants in the partnership do not slacken on the parameters of innovation and efficiency.

Akshaya also brings in clear focus the anomaly of the situation where telecom policies and controls continue to be exercised from remote levels by national governments. ICTs are increasingly recognised worldwide to be a crucial development infrastructure, and therefore it is only logical that their control be in the hands of local communities for effective contextual employment. The distinction between (1) the inter-connect telecom backbone, which is obviously an inter-regional issue (inter-state for a large country like India) and thereby should legitimately belong in the jurisdiction of the national governments, and (2) the means of extension of connectivity in its various forms and uses to local communities, needs to be seen in the light of new paradigms of ICT deployment and use. In many ways as seen from the case study, the local community will be much better off owning and managing its own connectivity network.

As the basic structure of a viable ICT-based interface agency for serving the citizens has been developed by Akshaya, the focus now shifts to the range and quality of content and services that can be delivered leveraging the Akshaya network. The government is by far the largest development agency, with elaborate development delivery structures in the various areas of education, health, livelihood support, welfare services etc. For these services to effectively plug into the Akshaya network and benefit the community, the line departments of the government responsible for these services need to ICT-enable the delivery of their services. And this by all counts is a challenging task.

The IT mission is now putting greater effort into mainstreaming ICTs in these government departments. While this process calls for far-reaching changes within these departments, the issues involving coordination and collaboration between different government agencies in delivering integrated services, especially the relationship between line departments responsible for the services and an interface agency like

[15] Private investment of more than INR 250 million (USD 5.8 million) was brought in this way into the Akshaya network.

Akshaya that delivers these services using ICTs, are even more complex. Grappling with them effectively requires both far reaching structural changes in governments, as well as strong political vision and leadership.

The sustained delivery of 'value' to citizens through the Akshaya network can be expected to develop a political constituency for widespread reliance on ICTs for delivery of government and development services. However, Akshaya has largely disregarded the participatory potential of an ICT platform for online engagement of citizens with processes of governance. E-governance services promoting governmental transparency and accountability, which are being developed in many e-governance initiatives elsewhere in India[16], do not find place in Akshaya's list of services.

Similarly, the community media dimension is yet another aspect that has not taken root in the online platform that Akshaya offers. Only when the local community has a greater control over its information and communication processes will it be able to engage with external institutions, including governments and markets, on better terms. This is the model through which the best potential of ICTs for development can be realised. But the very fact that such potent possibilities can challenge established power structures, including of the local and state politics, means that in a highly politicised state like Kerala transformation will take a circuitous path of negotiation and progress in stages. Meanwhile, it is a good sign that the state cabinet has approved the state-wide roll-out of the Akshaya initiative, aiming at setting up 6000 Akshaya centres across the state[17].

[16] Such as Rural e-Seva in West Godavari district in the state of Andhra Pradesh, which is the subject of another case study in this series.

[17] As per contextual appropriateness, both wired and wireless broadband solutions will be employed in this expansion; for example, in areas with high cable penetration, Internet through cable may be the preferred mode.